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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/751,085	01/02/2004	Colin John Dickinson	M02A229	1326

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THE BOC GROUP, INC.  
575 MOUNTAIN AVENUE  
MURRAY HILL, NJ 07974-2064

EXAMINER
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RIGGLEMAN, JASON PAUL

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/751,085

Applicant(s)

DICKINSON, COLIN JOHN

Examiner

Jason P. Riggelman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____.                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____.  | 6) <input type="checkbox"/> Other: ____.                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4 and 6-10 are rejected under 35 U.S.C. 102(e) as being unpatentable by Ching et al. (US Patent No. 6880560).
3. Ching et al. teaches a substrate processing apparatus with a cylindrical processing chamber 21 and a cylindrical cavity 6 defined by the chamber top 1 and bottom 1' (Column 5, Lines 7-13). A substrate holder 7 in the form of a pedestal is provided for holding the substrate, Fig. 1(a). A cylindrical megasonic transducer 9 is provided in the cleaning chamber. A high-pressure sealed connector 14 is used transmit an electrical cable passing electrical signals from the generator 15, outside the apparatus, to the transducer 9 inside the cleaning chamber (Column 6, Lines 59-66).
4. A transducer housing 25 is provided to hold the transducer 9 in the processing chamber 21. The electrical conduit 14 has a first electrical cable port (the hole in the chamber top 1), in Fig. 1(a), and a second electrical cable port (the hole in the top of the transducer housing), in Fig. 1(a). The transducer

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housing 25 is provided in the form of a box with six sides. The top side of the box 25 being disposed with an opening for the electrical cable. The first and second electrical cable ports and connected by a cylindrical sealing sleeve by extending the top of the transducer housing (from the hole in the transducer housing) to the exterior of the apparatus through a hole in the chamber top 1, Fig. 1(a). The electrical conduit is designed to isolate the environment of the supercritical CO<sub>2</sub> from that with the transducer – which is connectably that of the atmosphere.

5. Supercritical CO<sub>2</sub> is provided to the processing chamber 21 of the substrate processing apparatus 72, Fig. 3. The processing chamber 21 can operate at any suitable temperature and pressure such as 50 – 500 bar and 0°C to 150°C for supercritical CO<sub>2</sub> applications (Column 5, Lines 17-23).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ching et al. (US Patent No. 6880560) as applied to claims 1-4 above, and further in view of Rothman et al (US Patent Application Publication US2003/0116176).

8. Ching et al. does not teach a cylindrical transducer housing; however, Rothman et al. teaches a disc transducer 30 which is cylindrical and is housed by the lid of the cleaning apparatus in a cylindrical depression, Figs. 1-2 (paragraph

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[0087]). It would have been obvious to one of ordinary skill in the art to modify the box-shaped transducer housing of Ching et al. with the cylindrical form of Rothman et al. to create a transducer housing which can compactly house a disc-shaped transducer.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shibano (US Patent No. 5377709) teaches an ultrasonic device which has hermitically sealed conduits for supplying electrical cables to a transducer inside the device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason P. Riggleman whose telephone number is 571-272-5935. The examiner can normally be reached on M-F, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jason P Riggleman  
Examiner  
Art Unit 1746

JPR



**MICHAEL BARR**  
**SUPERVISORY PATENT EXAMINER**